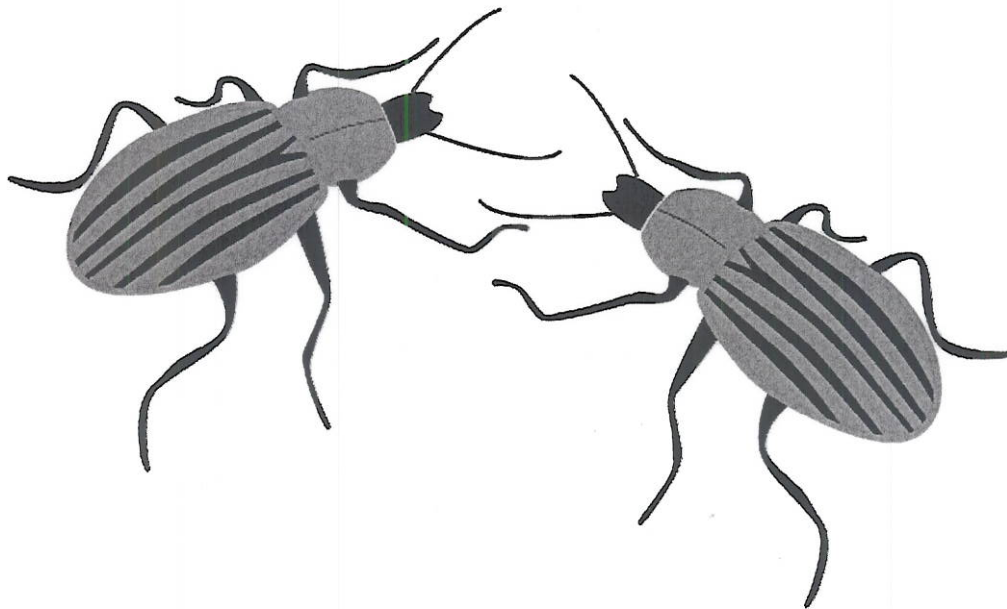




**XIV EUROPEAN CARABIDOLOGISTS MEETING**

# **Carabid Beetles as Bioindicators**

**The use of ground beetles in ecological and  
environmental studies; the usefulness and threats  
of methods used for monitoring species and populations**



**PROGRAMME – BOOK OF ABSTRACTS**

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## Interactions between spider and carabid communities at the North Taiga of West Siberia

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Human-disturbed habitats are widely distributed in the taiga zone of north-western Siberia as a result of increasing oil and gas production there. Most of these changes are caused by the formation of the new local infrastructure such as roads, etc. surrounding the oil wells which require huge amounts of sand originating from many sand quarries in the vicinity.

We sampled populations of predaceous soil-surface carabids and spiders along a successional series of abandoned sand quarries differing from 1 to 20 years old, and compared them with samples from populations of native bog and pine forest biotopes.

The study area was situated near Noyabrsk city (63° 15' N, 74° 30' E). From 1999 to 2002, 21 sites were investigated during which time 54 carabid species and 58 spider species were collected by pitfall trapping. Most of carabids belonged to the genera *Bembidion* (13 sp.), *Pterostichus* (8 sp.) and *Agonum* (5 sp.); because of the collecting technique used, most spiders belonged to the families Gnaphosidae and Lycosidae.

The distribution of these two taxa over habitats showed contrasting trends. Whereas concerning both their species number and abundance carabids prevail in disturbed habitats such as quarries, burnt areas, areas of oil extraction, the species richness and abundance of spiders is higher in the natural sites of old pine forests and bogs, and are more diverse and abundant in habitats with a greater environmental complexity, such as a moss or lichen carpet. Thus, in a 120 years old pine forest with *Cladonia* on the soil surface, only one carabid species was found (*Carabus canaliculatus* Ad.) in contrast to 10 spider species with an overall density of 26 individuals per 100 trap-days. Both values concern maxima for all habitats studied. Carabids are more diverse and abundant in open well-warmed habitats near water bodies; young quarries contained up to 14 species and 260 individuals per 100 trap days.

However, populations of both spiders and carabids of natural habitats differ distinctly from those affected by human action. In disturbed habitats, the share of the arcto-boreal carabid species is decreased and that of west-Palaeartic increased. Most spider species of the Noyabrsk environs are represented by widely ranging trans-palaeartic species.

Rank distributions of abundances of both carabid and spider species are similar as in natural habitats abundances are more evenly distributed than in disturbed ones.

Carabids inhabit recently disturbed habitats almost immediately, since they are mostly widely ranging and well flying species uncommon in natural boreal ecosystems. Yet, spiders are often absent from such sites, or there are 1-2 ubiquitous species with a very low density.

On oil extraction territories, the diversity of the arthropods studied is decreased only within the areas around the wells: spiders are practically absent whereas anthropophilic carabid species are still found there. Already in 10 m from poured oil, normal plant communities are found with a fauna common with predaceous herpetobionts.

As a separate study, we investigated the surroundings of points where gas is burned off. Because the temperature there is permanently raised and soot sediment is formed, the local plant communities at least within a distance of 200 m from such points look depressed. The population of predaceous herpetobionts resembled that of burnt areas but was substantially impoverished.